THE UNIVERSITY OF
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Measurement of the Recidivism of Offenders attending the Kimberley Offender Program.

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1. Background

In April 1999, the Crime Research Centre, University of Western Australia was contracted by the Alternatives to Violence Unit (ATVU), WA Ministry of Justice, to calculate recidivism estimates for offenders attending the Kimberley Offender Program (KOP). The KOP program consists of a series of three-hour sessions with groups of approximately ten Aboriginal offenders who are either serving community based orders, serving prison sentences, or on parole. The program is outsourced by the Ministry of Justice (MOJ) to Centacare in Broome and runs about five times per year. The first KOP program was conducted in December 1994. Between that time and the end of 1998 (our defined study period), a total of 22 programs have been undertaken, the first on 5 December 1994 and the last on 11 December 1998. These programs were attended by 206 offenders.

The specific terms of the MOJ-CRC contract were to:

- Estimate the recidivism of KOP offenders (ultimately, and at specific follow up times)
- Calculate the median time to fail for these offenders
- Attempt to estimate recidivism probabilities and time-to-fail measure of offenders who have not undertaken the KOP program.

The provision of accurate measures of the recidivism risks of KOP offenders is intended to assist the ATVU in its decision making process regarding this and other programs under its management.

2. Method and Data Sources

A quasi-experimental design was used in this study. This involved the calculation of recidivism estimates for the KOP offender group (using the methods described in Section 2.2 below), and then comparing these estimates with those calculated for non-KOP offenders. Section 2.4 describes how the non-KOP group was selected for the study.

2.1 Recidivism database

Information about the offending and re-offending patterns of offenders were obtained from the Recidivism database maintained by the Crime Research Centre. The database contains the records of all persons who have been apprehended (arrested) by the WA Police Service since 1 April 1984. The database contains the "offending histories" of over 250,000 offenders, arrested on more than 600,000 occasions, and charged with over 1 million offences.

An important feature of the CRC Recidivism database is that it is "linked", that is, for each offender, arrest records have been linked to prison records so that the follow-up at each arrest has been corrected to count only the time that the offender has been exposed to the risk of re-arrest (sometimes referred to as 'available street time'). Thus, *the time taken to re-offend has been adjusted for any amount of time spent in custody.* This has implications for the current study because the majority of KOP offenders

(87%) who participated in the various programs did so while still serving prison sentences.

Implicit in the use of the CRC Recidivism database is the definition of "re-offending", measured as "re-arrest", rather than "reconviction", as is often used by other recidivism studies. Moreover, for this study, we have measured our follow-up of offenders from the date of arrest *immediately prior* to program start date (referred to in this Report as their "nth" arrest) to their *next* arrest ("n+1th" arrest), or the cutoff data (31 December1998), whichever occurs sooner.

2.2 Statistical techniques

For this study, probabilities of re-arrest have been estimated from a parametric statistical model fitted to the observed (actual) failure or follow-up times of the specific offender group(s) under review. The data under analysis are said to be censored, that is, for some cases insufficient time has elapsed between arrest and the chances of re-arrest. For example, a person undertaking a KOP course in December 1998 would have much less opportunity to be re-arrested following the course (and before the end of the study period) than a person who had attended a course in December 1994. Ordinarily, such cases would seriously bias estimates of re-arrest or re-offending. A statistical method, known as failure or survival rate analysis, is utilised to account for such bias and permits accurate estimates of the probability of re-arrest to be calculated. In previous work by CRC researchers on the probabilities of re-offending in Western Australia, a Weibull mixture model was fitted, with good results, to the observed failure or follow-up times of offenders arrested by police (Broadhurst and Loh, 1995).

The Weibull mixture model is described by various parameters including *p*, a parameter representing the probability of ultimate or long-term failure, λ (lambda) which is related to the rate of failure, and α (alpha) which describes the "shape" of the Weibull curve. A 95% confidence interval associated with the estimated *p* value is also described, as is the median time to fail (related to λ) which summarises the 'middle' time taken for observing failure. For a more detailed description of the Weibull model and its application to research into recidivism, refer to Broadhurst and Loh (1995).

The Weibull model used here also incorporates covariates so that differences between sub-groups of the population under analysis can be tested. "Covariates" are variables associated with each individual that contain addition information of interest, such as offence type, sex, race, prior record, etc. This method of modeling covariates was developed by local researchers (see Maller, 1993, and also Broadhurst and Maller, 1992, for more information).

2.3 KOP Data

The records of 206 offenders who attended the KOP were stripped of name-identifying information and supplied to the CRC by MOJ. It was found that although there had been 206 attendances at KOP courses, only 179 distinct individuals had

actually been involved in the programs. A number of offenders (23) had attended the KOP more than once during the study period (four offenders had attended the program three times,19 offenders had attended twice and the remaining 156 offenders attended the course only once).

Of the 206 program attendances[1], 177 (86%) had successfully completed the program. In all cases, offenders were Aboriginal males from the Kimberley region. The majority of attendances (179/206 or 87%) occurred while offenders were serving prison sentences and the remainder (27/206 or 14%) attended whilst serving community-based orders.

The average age of KOP offenders was 27.8 years (median = 26 years). The youngest person attending the program was aged 16 years and the oldest was 54.

About the covariates:
The following variables were either supplied by the Ministry of Justice or obtained from the CRC recidivism database and used in the co-variate analysis: sex, race, prior arrests, age, offence-type and completion-status. Completion-status refers to whether or not the offender successfully completed the KOP course. Note that although sex and race are important variables which influence estimates of recidivism, these two factors were the same for all offenders attending the KOP program (that is, all were male Aborigines) and, thus, form part of the underlying analysis and resulting recidivism estimates.

Numerous recidivism studies have shown that prior arrest (or, at least, some measure of prior criminal record) is an important factor in estimating the likelihood of re-offending. For this study, prior arrests were initially grouped into 3 categories: those having fewer than 10 prior arrests, those with 10-20 previous arrests and those with 21 or more prior arrests. However, there was no statistical difference between the last two groups in terms of re-offending behaviour, so these were combined into a single category labelled '10 or more prior arrests'.

Age is also an important factor which has been shown to be related to the likelihood of re-offending. For this study, offender ages were group into two categories: those aged below 25 years and those above.[2]

Offences were grouped into four broad categories -
- against person offences (including most violent offences such as homicide, assault, sexual assault and robbery),
- property offences (comprising burglary, theft and property damage),
- good order offences (comprising mostly disorderly conduct, some justice offences such as breaches of orders and a small number of drug possession offences), and
- driving offences (comprising mostly drink-driving offences and some miscellaneous motor vehicle offences).

[1] For the purposes of this analysis, multiple attendances by the same offender were treated simply as attendances by different offenders, since the calculation of recidivism estimates would be the same in either case, that is, follow-up is still taken from the arrest immediately prior to program start to the date of subsequent re-arrest, if any, or censor date.
[2] Note that alternative age-groupings (that is, those below 21 years and those aged 21 years or older) were attempted, however, there were insufficient cases in these groupings to allow further analysis.

Table I describes the types of offences committed by these offenders prior to their attendance at a KOP course. More than half of KOP offenders (54%) had committed violent offences prior to the program start.

Table I: Offences committed at "nth" arrest (that is, immediately prior to attendance at KOP)

Offence type	n	%
Against person	110	54.5
Property	32	15.8
Good order/Justice	35	17.3
Driving	25	12.4
Total	202	100

KOP offenders were also categorised into a typology of offenders, based on their *full* prior arrest record (rather than just their last arrest). Offenders were classified as "violent offenders" if 50% or more of all prior arrests were for against person offences. An offender having more than 50% of prior arrests comprising property offences were classified as "property offenders", while those with 50% of priors made up of good order offences were labelled as "good order offenders". Offenders with only one arrest prior (of any type) were labelled as "debutantes" and those having no particular offence type accounting for more than 50% of prior arrests were categorised as "generalists".

Table II: Typology of KOP offenders.

Offender typology	KOP n	%
Violent	30	14.9
Property	44	21.8
Good order	10	5.0
Other	14	6.9
"Generalist"	102	50.5
"Debutante"	2	1.0
Total	202	100.0

As Table II shows, about 15% of KOP offenders were "violent offenders" and about 22% were "property offenders". Note also that in about half of all KOP cases, the offender did not have a dominant offence type and were thus labelled as "generalists".

2.4 Non-KOP data

Initially, our approach had been to define and use a matched control-group of non-KOP offenders. However, there were difficulties with this approach in that an insufficient number of suitably "matched" non-KOP offenders were obtained.[3] Consequently, the group of all non-KOP offenders from the Kimberley region, who were male and Aboriginal, was extracted from the CRC database and compared with the KOP offenders.

These comprised *all* Aboriginal male offenders who had offended *at least once* in the Kimberley region from the 1 January 1990 to 11 December 1998, and who had not attended any KOP course.[4]

In calculating the re-arrest estimates for the KOP group, we measured, for each individual, the time from the arrest immediately prior to an attendance at a KOP program to their next arrest (or cutoff date, if there was no subsequent arrest). In order to calculate similar estimates for the non-KOP group, it was necessary to establish a point in each persons "criminal career" from which to measure time to next arrest. However, since these individuals did *not* attend a KOP program, a pre-defined "nth" arrest point was not available and, therefore, it was necessary to make some determination of such a point. It was determined that if an individual had an arrest prior to the commencement of the first KOP program, then we would measure from the arrest immediately prior to this program start date to their next arrest. If an offender did not have any arrests prior to this date but had arrests after it (that is, they did not start offending until *after* the start of the first KOP program), then we would select the arrest immediately prior to the first KOP program that they would have been "eligible" for.

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[3] Although a matched control group was not ultimately selected for the study, the matching methology that eventuated may be applicable to future studies with similar comparative aims. A description of the iterative algorithm is provided here for interest. The objective of the algorithm was to match offenders, in order of most importance, on sex, race (Aboriginal or non-Aboriginal), number of prior arrests, age and offence type (3-digit ANCO code).
The matching algorithm proceeds as follows:

- Find an offender which matches exactly on all of these variables.
- If an exact match on these variables can *not* be found, broaden the search on offence type so that matches on the first two digits of ANCO are permitted. (Exact matching on all other variables is still required, however.)
- If a match at this level can *not* be found, extend the search on offence type again so that matches on the first digit (only) of ANCO is permitted.
- Again, if a match at this level can *not* be found, abandon any match on offence type but continue to match on sex, race, number of prior arrests and age.
- If a match cannot be found, allow some variation on age. Broaden age-groupings to find a match.
- If a match on age-grouping still can not be found, ignore age and continue to match on sex, race and number of prior arrests.
- Repeat the process of matching but allow some variation of prior arrest.
- If a match on prior arrest cannot be found, ignore this variable and match on sex and race only.

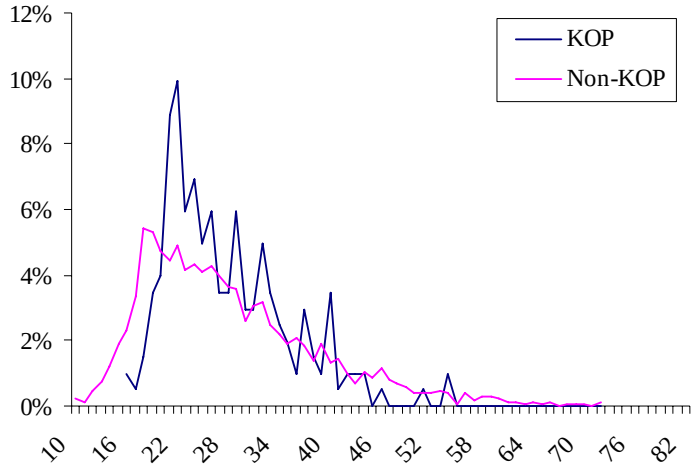
If, during this process, the algorithm successfully returns more than one match for each KOP offender (based on the variables described above) then select a match from the Kimberley region as the 'preferred' match. If a Kimberley match did not exist, then select a match from some other region.

[4] The Kimberley region comprised the following postcodes: 6725, 6726, 6728, 6733, 6740, 6743, 6765, 6770. The end date of 11 December 1998 was used because it was the start date of the last KOP program occurring during the study period.

In about 85% of non-KOP cases, offenders had at least one arrest prior to the start of the first KOP program. Thus, for these individuals, we measured from their arrest immediately prior to this program's start date to their next arrest, if one existed.

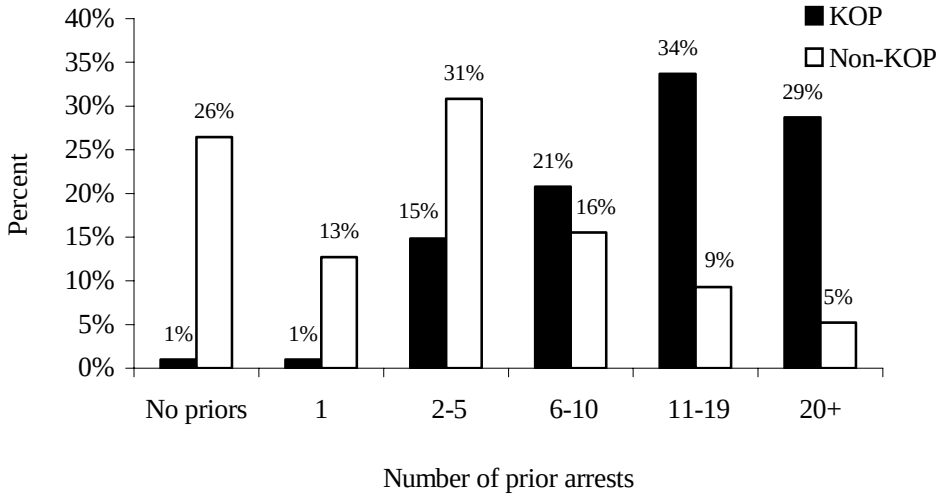
The non-KOP dataset comprised of 3,676 individual offenders. The average age of this group was 28.2 years, slightly older than the average age of KOP offenders. However, the median age of both groups was the same (26 years). The youngest non-KOP offender was aged 10 years and the oldest was aged 82 years. A comparision of the age distributions of both offender groups is presented in Figure 1.

Figure 1: Age distribution of KOP and non-KOP offenders



About two-fifths (39%) of all non-KOP offenders had either no or just one prior arrest, a further 47% had between two and ten prior arrests, while the remainder (14%) had more than 10 prior arrests. Compared with KOP offenders, this group comprised a much greater proportion of "early career" offenders (see Figure 2).

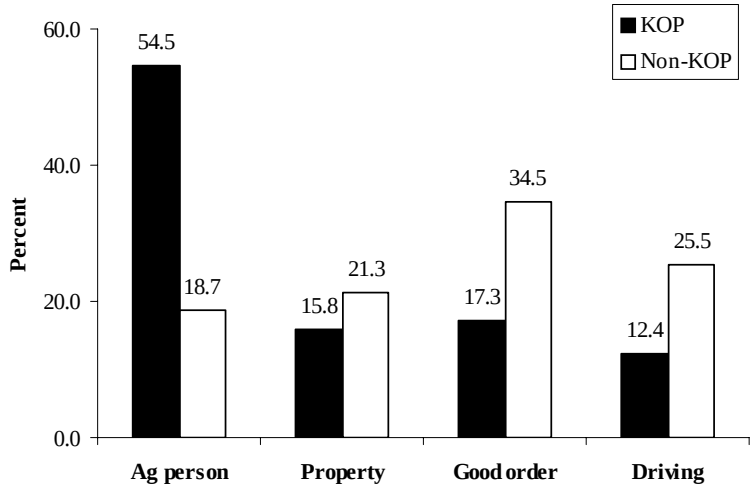
Figure 2: Distribution of prior arrests of KOP and non-KOP offenders



About 60% (2,180 out of 3,676) non-KOP offenders were subsequently re-arrested during the study period.

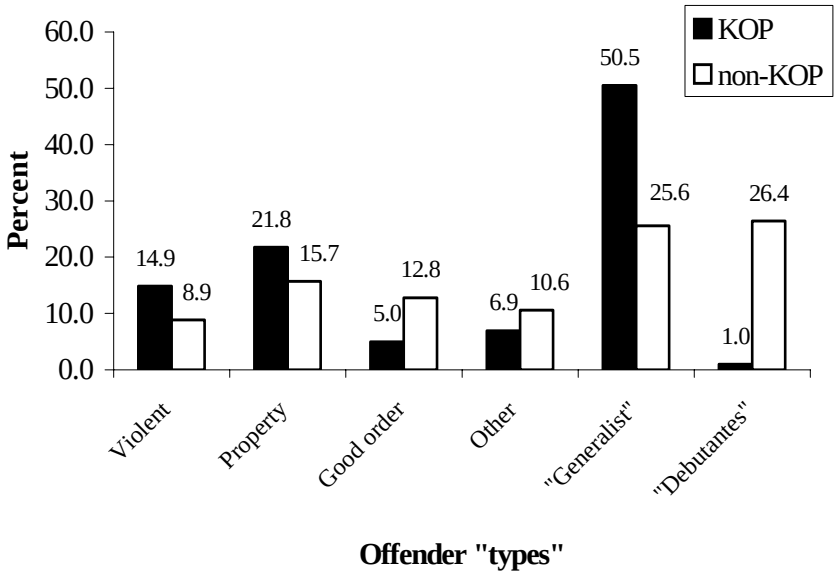
The types of offences committed by non-KOP offenders at "nth" arrest (that is, immediately prior to the start of the most relevant KOP program) are described in Figure 3. In contrast to KOP offenders, most non-KOP offenders had been arrested for non-violent offences, that is, property offences, good order, driving, etc.

Figure 3: Comparison of offences committed by KOP and non-KOP offenders at "nth" arrest



The typology of non-KOP offenders is described in Figure 4. Compared with KOP offenders, the non-KOP group consisted of a much greater proportion of "debutantes" (that is, offenders with only one prior arrest) but a smaller proportion of violent offenders (compare 8.9% with 14.9%) and property offenders (compare 15.7% with 21.8%)

Figure 4: Comparison of offender typology, KOP and non-KOP offenders.



3. Results

3.1 Recidivism of KOP offenders

Of the 206 KOP cases available for analysis, three cases were "lost" to follow-up, that is, according to police arrest records these people had not been re-arrested and charged since 1984. Furthermore, one of these offenders had been through the KOP on two occasions, thus, a total of four cases were lost to follow-up. The remaining 202 cases were used in estimating recidivism for the KOP group.

Using the survival techniques described previously, the likelihood of re-arrest of KOP offenders, as a group and by their covariates (prior arrest, age and offence), were estimated. These are summarised in Table III. As the table shows, for the whole group of KOP offenders (all cases), the likelihood of re-offending was very high (0.93). In other words, 93% of KOP offenders were likely to re-offend at some stage in the future. Median time taken for the group to re-offend was 1.4 years.

Table III: Ultimate probabilities of re-arrest for KOP offenders

Offender characteristics		p	CI	lambda	n	nf	median	-2logL
Prior arrests	<10	0.92	(0.69,0.98)	0.38	67	24	2.0	300.54
	10+	0.92	(0.69,0.98)	0.66	135	62	1.1	
Age	<25 years	0.73	(0.49,0.89)	0.74	85	31	1.0	302.53
	25 years +	0.99	(0.79,1.00)	0.50	117	55	1.5	
Offence	Ag. person	0.99	(0.78,1.00)	0.46	110	43	1.8	363.88
	Property	0.996	(0.89,1.00)	0.91	32	17	0.9	
	Good order	0.65	(0.27,0.91)	1.31	35	15	0.6	
	Driving/MVeh	0.86	(0.53,0.97)	1.00	25	11	0.8	
Completion status								
	Successful	0.93	(0.76,0.98)	0.49	174	67	1.5	303.16
	Unsuccessful	0.93	(0.76,0.98)	0.84	28	19	0.9	
All cases		0.93	(0.71,0.99)	0.53	202	86	1.4	308.13

Notes: p = probability of re-arrest; CI = 95% confidence intervals for p; n = number of cases; nf = number of failures; median = median time to re-arrest in years.

KOP offenders with a substantial prior criminal record (10 arrests or more) were compared to those with fewer than 10 prior arrests. Both groups were found to have the same ultimate probabilty of re-arrest (0.92). However, their rates of re-arrest varied in a significantly different way. The group having the more substantial criminal record was found to re-offend at a faster rate: median time to fail for this group is 1.1 years, compared with 2 years for the other (<10 prior arrests) group.

Recidivism was also found to vary with age. Surprisingly, the younger age-group (those aged below 25 years of age) had a lower re-arrest probability than older offenders (compare 0.73 with 0.99). Note, however, that the re-arrest *rate* is higher for younger offenders: the median time to re-arrest for offenders aged under 25 years is 1 year, compared with 1.5 years for offenders aged 25 years or over.

The recidivism of KOP offenders also varied with offence-type. Offenders arrested for against person offences (comprising mostly of violent offences such as assaults and sexual assaults) had a very high re-arrest probability of 0.99 - almost a certainty. The same was true of offenders arrested for property offences (0.996). However, the *rate* of re-arrest was much slower for violent offenders than property offenders: the median time to re-arrest for violent offenders was 1.8 years, compared with 0.9 for property offenders.

Offenders arrested for less serious offences such as good order and motor vehicle/driving-related offences had lower probabilities of re-arrest (0.65 and 0.86 respectively). However, the *rates* of re-arrest for these groups were high (0.6 years and 0.8 years respectively).

Interestingly, offenders who completed the KOP program successfully were found to have the same ultimate probability of re-arrest (0.93) than those who did not complete the program. However, the *rate* of re-arrest was significantly higher for the unsuccessful program attendees than for the rest: median time to re-arrest for unsuccessful completions was 0.9 years, compared with 1.5 years for those successfully completing the program.

In addition to the ultimate probability of re-arrest, estimates of the likelihood of re-offending after two and four years were also calculated and these are described in Table IV.

Table IV: Stepwise probabilities of re-arrest for KOP offenders

Offender characteristics		p within 2 yrs	p within 4 yrs
Prior arrests	<10	0.51	0.74
	10+	0.64	0.86
Age	<25 years	0.58	0.71
	25 years +	0.62	0.87
Offence	Ag. person	0.51	0.74
	Property*	0.78	0.93
	Good order**	0.63	0.63
	Driving/MVeh**	0.76	0.76
Completion-status			
	Successful	0.57	0.80
	Unsuccessful	0.72	0.91

Note:

* maximum time to fail for this group was less than 4 years

** no failures occurred after 2 years and before 4 years

As Table IV shows, and as one might expect, the probability of re-offending within two years is lower than the probability of re-offending within four years, which in turn is less than the *ultimate* likelihood of re-offending for KOP offenders. This pattern was the same across all covariates. For example, for young offenders (aged below 25 years), the probability of re-offending within two years was 0.58, and 0.71 for within four years. The lowest two-year probabilities of re-arrest were observed for

offenders with fewer than 10 arrests (0.51), violent offenders (0.51) and younger offenders (0.58). Offenders who successfully completed the KOP program were also more likely to have lower two-year re-arrest probabilities (0.57).

A breakdown of re-offending KOP offenders by the time taken to re-offend, is presented in Table V.

Table V: Time taken by re-offending KOP offenders to be re-arrested, percentage.

Offender characteristics		< 6 mths	6-12 mths	1-2 yrs	2-3yrs	3+ yrs	Total	
		%	%	%	%	%	n	%
Prior arrests	<10	21	8	46	21	4	24	100
	10+	44	32	15	6	3	62	100
Age	<25 years	42	29	23	6	0	31	100
	25 years +	35	24	24	13	5	55	100
Offence	Ag. person	30	23	26	16	5	43	100
	Property	29	18	35	12	6	17	100
	Good order	57	36	7	0	0	15	100
	Driving	55	27	18	0	0	11	100
Completion-status								
	Successful	39	21	25	10	5	67	100
	Unsuccessful	32	42	16	11	0	19	100
All cases		37	26	23	10	3	86	100

As the Table shows, 37% of re-offending KOPs did so within six months of follow-up, a further 26% re-offended between six and twelve months, while another 23% re-offended after 1-2 years of follow-up. Note, however, that there was some variation in this pattern when broken down by covariates. For example, a greater proportion of offenders with substantial prior records (10+ arrests) had re-offended within six months (44%), compared with offenders having fewer previous arrests (21%). These variations are consistent with the differences found in the median time to fail estimates obtained from the earlier survival analyses.

3.2 Recidivism of non-KOP offenders

Using the same survival analysis techniques, the ultimate probabilities of re-arrest were calculated for the non-KOP offender group. These are described in Table VI.

Table VI: Ultimate probabilities of re-arrest for non-KOP offenders

Offender characteristics		p	CI	lambda	n	nf	median	-2logL
Prior arrests	<10	0.99	(0.98,1.00)	0.16	3,077	1,675	4.5	11437.56
	10+	0.91	(0.87,0.94)	0.60	599	505	1.2	
Age	<25 years	1.00	(0.99,1.00)	0.22	1,607	1,051	3.1	11659.59
	25 years +	1.00	(0.99,1.00)	0.15	2,069	1,129	4.8	
Offence	Ag. person	0.99	(0.98,1.00)	0.19	686	416	3.6	11746.60
	Property	0.99	(0.98,1.00)	0.21	783	496	3.3	
	Good order	0.99	(0.98,1.00)	0.17	1,270	739	4.0	
	Driving/Other	0.99	(0.98,1.00)	0.17	937	529	4.2	
All cases		0.99	(0.98,1.00)	0.18	3,676	2,180	3.8	11765.99

Notes: p = probability of re-arrest; CI = 95% confidence intervals for p; n = number of cases; nf = number of failures; median = median time to re-arrest in years.

As the Table shows, the ultimate probability of re-arrest for the non-KOP offender group (0.99) is as high, if not higher than the ultimate probability of re-arrest for the KOP offender group (0.93). It is almost certain (99%) that members of the non-KOP group will be re-arrested by the police at some stage in the future. It is interesting that there does not appear to be much variation in covariate probabilities. However, this may be because of a bounding effect of the Weibull model.

Some variation in the *rate* of re-arrest (λ) was observed, however. Non-KOP offenders with a substantial prior criminal record (10 arrests of more) were found to re-offend at a much faster rate than those with less than 10 prior arrests: the median time to fail for the those with many arrests was 1.2 years, compared with 4.5 years for the group with fewer arrests.

The re-offending rate also varied with age: younger non-KOP offenders generally re-offended at a faster rate than older offenders. The median time to fail for non-KOP offenders aged below 25 years was 3.1 years, compared with 4.8 years for those aged 25 years and over.

Offenders arrested for property offences also re-offended at a faster rate than violent offenders: compare 3.3 years median time to fail with 3.6 years.

Estimates of the likelihood of re-offending after two and four years of follow-up were also calculated for non-KOP offenders and, like the KOP group, the probability estimates at two years follow-up were lower than those at four years and substantially lower than the longterm probabilities of failure (Table VII).

Table VII: Stepwise probabilities of re-arrest for non-KOP offenders

Offender characteristics		p within 2 yrs	p within 4 yrs
Prior arrests	<10	0.26	0.45
	10+	0.65	0.84
Age	<25 years	0.41	0.61
	25 years +	0.26	0.45
Offence	Ag. person	0.34	0.53
	Property	0.39	0.57
	Good order	0.29	0.50
	Driving/Other	0.30	0.49

A breakdown of the times to fail for re-offending non-KOPs is presented in Table VIII. In contrast to the KOP group (but in agreement with the median times estimates by the survival model), a much smaller proportion of non-KOP offenders failed in the shorter term. Almost one third (31%) of all non-KOP offenders re-offended within 12 months of follow-up, compared with 63% for KOP offenders.

Table VIII: Time taken by re-offending non-KOP offenders to be re-arrested, percentage

Offender characteristics		< 6 mths	6-12 mths	1-2 yrs	2-3yrs	3+ yrs	Total	
		%	%	%	%	%	n	%
Prior arrests	<10	13	13	20	18	37	1,675	100
	10+	26	24	27	14	9	505	100
Age	<25 years	21	17	22	15	26	1,051	100
	25 years +	11	14	21	19	35	1,129	100
Offence	Ag. person	15	18	21	17	30	416	100
	Property	19	17	23	16	25	496	100
	Good order	15	13	20	17	35	739	100
	Driving	14	14	23	18	31	529	100
All cases		16	15	22	17	31	2,180	100

The types of offences committed by KOP and non-KOP offenders at "nth" arrest and at subsequent arrest ("n+1th" arrest) are presented in Table IX. For KOP and non-KOP offender groups, the number of offenders committing *similar* offences at both arrest points appear on the diagonal elements of the table. Offenders committing the *same or more serious* offences are highlighted by the grey areas of the table.

Table IX: Offence types committed at "nth" and "n+1th" arrest, KOP and non-KOP offenders.

KOP

		n+1 arrest				
		Ag person	**Property**	**Good order**	**Driving**	**Total**
nth arrest	**Ag person**	*9*	7	13	14	43
	Property	3	*1*	9	4	17
	Good order	5	2	*4*	4	15
	Driving	3	1	2	*5*	11
	Total	20	11	28	27	86

Non-KOP

		n+1 arrest				
		Ag person	**Property**	**Good order**	**Driving**	**Total**
nth arrest	**Ag person**	*113*	68	127	108	416
	Property	78	*171*	169	78	496
	Good order	142	136	*305*	156	739
	Driving	86	52	157	*234*	529
	Total	419	427	758	576	2180

As Table IX shows, about 22% (19/86) of those KOP offenders who re-offended committed the *same* type of offence before the program and at their next arrest, while a further 19% (16/86) commited *more serious* offences at the arrest following the program. In comparison, about 38% (823/2180) of non-KOP re-offenders committed similar offences at both "nth" and next ("n+1th") arrest, and a further 30% (651/2180) committed more serious offences at their next ("n+1th") arrest. In other words, it appears as though more of the non-KOP group progresses to more serious offending than the KOP group.

4. Discussion

Although the two groups of offenders (KOPs and non-KOPs) are neither identically nor ideally matched (in terms of sample size and/or some offender characteristics such as prior record and offence distribution), there are sufficient similarities (sex, race, age distribution and regional location) to allow us to compare the data and make the following observations:

- First, the estimated ultimate probability of re-offending for both groups was remarkably high (greater than 0.9), indicating that for the general male Aboriginal offender population in the Kimberley area in WA, the likelihood of re-arrest is almost a complete certainty. The estimated probability for the non-KOP group (0.99) was higher than that for the KOP group (0.93), however, there was some overlap in the confidence intervals of these estimates.

- Second, there was little variation in the ultimate probabilities of re-arrest for the non-KOP group, however, some were observed for the KOP group. In particular, for two sub-groups namely, young offenders (those aged under 25 years) and offenders arrested for good order offences, the likelihood of re-arrest was significantly lower for KOPs (0.73 and 0.65) than for non-KOPs (1.0 and 0.99).

- Third, although the ultimate probabilities of both groups were not dissimilar, there were significant differences in the *rates* of re-offending (median times to fail). Generally, the KOP offenders failed at a much faster rate (sooner) that non-KOP offenders (see Table X).

Table X: Comparison of median times to fail, KOP offenders and non-KOP offenders

Offender characteristics		Median time to fail	
		KOP	Non-KOP
Prior arrests	<10	2.0	4.5
	10+	1.1	1.2
Age	<25 years	1.0	3.1
	25 years +	1.5	4.8
Offence	Ag. person	1.8	3.6
	Property	0.9	3.3
	Good order	0.6	4.0
	Driving	0.8	4.2
All cases		1.4	3.8

- Fourthly, and as a direct consequence of differing rates of re-offending, the estimated probabilities of re-offending after two years and four years of follow-up were generally lower for the non-KOP group than for the KOP group. This pattern was evidenced across all covariates (see Table XI).

Table XI: Comparison of two- and four-year probabilities of re-offending, KOP and non-KOP offenders.

Offender characteristics		p within 2 yrs		p within 4 yrs	
		KOP	Non-KOP	KOP	Non-KOP
Prior arrests	<10	0.51	0.26	0.74	0.45
	10+	0.64	0.65	0.86	0.84
Age	<25 years	0.58	0.41	0.71	0.61
	25 years +	0.62	0.26	0.87	0.45
Offence	Ag. person	0.51	0.34	0.74	0.53
	Property	0.78	0.39	0.996	0.57
	Good order	0.63	0.29	0.63	0.50
	Driving	0.76	0.30	0.76	0.49

- Finally, there was some evidence that although the KOP group may be re-offending sooner than the non-KOP group (at least, in the shorter term), fewer KOP offenders than non-KOPs progressed to more serious offences immediately following attendance at the program. As Table IX showed, only 19% of KOP offenders committed more serious offences subsequent to program attendance, compared with 30% for non-KOPs.

Conclusion

Using survival modelling techniques and data from a "linked" database, this study has returned accurate estimates of both the likelihood of re-offending (ultimately, and at earlier stages of follow-up) and the rate at which this offending occurs for two offender groups: KOP offenders and non-KOP offenders. This should provide useful information to decision-makers within the WA Ministry of Justice.

We should, however, be mindful that other important aspects of recidivism (such as the type of re-offending and the seriousness of re-offending) have not been examined or described in any great detail by the study. Moreover, the study results do not, in themselves, tell us anything about the operation of the Kimberley Offender Program or its effectiveness in dealing with male Aboriginal offenders with a history of violent offending. As this and other studies show, the overall recidivism rate of Aboriginal males in Western Australia is exceptionally high, and any endeavour which seeks to reduce this rate should be encouraged.

References

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